



RADIATION EMERGENCY



**CALL 206 N-U-C-L-E-A-R
(206) 682-5327**



DIVISION OF RADIATION PROTECTION

7171 CLEAN WATER LANE, BLDG 5

PO BOX 47827

OLYMPIA WA 98504-7827

(360) 236-3220

[HTTP://WWW.DOH.WA.GOV/EHP/RP/](http://WWW.DOH.WA.GOV/EHP/RP/)



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IN THE EVENT OF AN ACCIDENT:

Rescue Victims, Give Lifesaving Emergency Assistance.

Whenever possible, remain upwind to fight fire.

Restrict access to the site to avoid spreading contamination.

Do not attempt to move or clean up damaged containers.

Notify the Division of Radiation Protection by calling:

206-N-U-C-L-E-A-R. (682-5327)

Identify the call as a **RADIATION EMERGENCY**

Provide the requested information.

ON SCENE NOTES:

DATE ____/____/____ TIME ____

WHO: _____

WHERE: _____

WHAT HAPPENED: _____

Radioactive isotopes involved: _____

RADIATION EMERGENCY HANDBOOK

Washington State Department of Health

Environmental Health Programs

Division of Radiation Protection

Olympia, Washington 98504-7827

April 1975

Revised July 1977

Revised July 1979

Revised April 1984

Revised November 1991

HANDBOOK OBJECTIVES

To provide guidance to licensee management, and incident commanders in the State of Washington who may be called upon to assist in the event of a radiation emergency.

To establish notification procedures in the case of an emergency.

To define responsibilities and actions for individuals, licensees, and certain agencies for radiation emergency response.

PREFACE

Washington State rules and regulations for radiation protection require that any theft, loss, overexposure, or accident involving radioactive materials or radiation producing devices be reported to the Department of Health (DOH), Division of Radiation Protection. Some events must be reported immediately. Unless you are certain of the reporting requirements, we recommend that all events be reported as soon as possible.

This handbook is a standard reference for management personnel with oversight responsibilities for radiation emergencies involving all radiation activities regulated by the Division. It contains information and procedures useful to management and describes individual and agency responsibilities during and after such an emergency. Emergency response coordination and communications should occur DIRECTLY with DOH, Division of Radiation Protection via the (206) NUCLEAR (682-5327) emergency number.

Users of this handbook are encouraged to notify the Division of Radiation Protection regarding any omissions or errors. Comments or requests for further information are also invited by calling (206)586-8942.

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SCOPE

This handbook is intended as a reference for radiation emergencies. It is intended to supplement the existing emergency plans of an agency or licensee. The guidelines are to provide a basic overview of what to expect in an emergency situation. Detailed procedures prepared in advance cannot anticipate all of the conditions which may be encountered in actual emergency situations. Therefore, this handbook outlines emergency actions for the most likely radiation emergencies. Sound health physics principles must apply to all situations.

GENERAL

The Department, through the Division of Radiation Protection, is responsible for protecting the public health and safety from the hazards of radioactive material. Should an emergency occur, DOH has the authority to issue appropriate orders to fulfill that responsibility.

Upon notification of an emergency involving radioactive material the Division of Radiation Protection will determine the necessary and appropriate response. Depending on the extent of the emergency, a radiation health physicist or a Division of Radiation Protection Field Team may be dispatched to the scene. Some small scale incidents may be handled over the telephone without need for further response.

Notification to the Division does not relieve the licensee, its management or individual users of the responsibility to take appropriate actions to assess, control, mitigate and protect individual workers, emergency personnel, and the general public from the radiation hazard. Any action beyond those specified in this handbook should be taken only by a responsible individual, knowledgeable about the specific hazard.

DURING EMERGENCIES:

The Division of Radiation Protection will:

- Evaluate the radiation aspects of the emergency and assist in determining the appropriate actions.
- Provide technical assistance and information where needed.
- Review the conduct and adequacy of radiation monitoring and surveys.
- Review the conduct of, and/or perform, dose assessments.
- Collect and analyze radiation health and safety data.
- Provide technical information to be used in press releases.

NOTIFICATION AND REPORTING GUIDELINES

ALL RADIATION EMERGENCIES AND INCIDENTS AS DEFINED BELOW MUST BE IMMEDIATELY REPORTED TO THE DIVISION OF RADIATION PROTECTION.

This includes any unplanned occurrence which creates or may create a public hazard due to radiation exposure or contamination. These may include:

- Transportation accidents involving radioactive shipments.
- Explosion, fire, or both at facilities where radioactive material is present.
- Stolen or lost radioactive material.
- Injuries involving radioactive material.
- User spills or any unplanned release involving immediate radiation hazards to people.

CALL (206)-NUCLEAR (206)-682-5327, 24 hour line

GENERAL GUIDELINES
FOR RADIATION EMERGENCIES

STOP OPERATIONS

MOVE PERSONNEL AWAY FROM SOURCE

ASSESS THE SITUATION

Medical emergencies and other hazardous materials may take priority.

Establish A Restricted Area Around The Source

Call 206-NUCLEAR 206-682-5327

Wait until qualified help arrives if you lack necessary equipment or training to respond.

Keep your own exposure as low as possible. Use dosimeter or survey meter to monitor your exposure if these are available.

INDOORS: Close off ventilation system.

OUTDOORS: Stand upwind of loose radioactive material or fire involving radioactive material.

NOTES:

PRE-ACCIDENT PREPAREDNESS

PRE-ACCIDENT PREPAREDNESS

MANAGER:

Do you have sufficient Notification posters where your employees can easily refer to them during an emergency? See appendix F for notification poster available from the Division.

Are your employees familiar with approved emergency procedures?

Have you identified your radiation knowledgeable personnel?

EMERGENCY RESPONDER:

Do you have a current list of radioactive materials licensee's in your jurisdiction? This information is available from the Division upon request.

Do you have a proper survey meter in good operating condition?

Do you have a set of self-reading dosimeters and a charger?

Are anti-contamination supplies available in sufficient quantity? These include plastic gloves, foot coverings, and whole body suits with hoods.

NOTES:

ACCIDENT/EMERGENCY

MANAGER'S CHECKLIST:

Have workers been removed from area?

Have emergency personnel arrived?

Are emergency workers aware of radiation hazard?

Has the most knowledgeable staff person assessed the situation?

Verify that 206 NUCLEAR has been reached, if required.

Is your Radiation Safety Officer or most knowledgeable staff assisting the on-scene incident commander?

If contamination is possible; Have steps been taken to:

1. Confine any spills?
2. Collect contaminated clothing and other items?
3. Inform emergency personnel and hospital staff?
4. Survey emergency vehicles for contamination?

For off-site transportation incident:

1. Obtain a copy of the shipping papers for reference.
2. Notify the consignor and consignee (shipper/receiver) of the problem. They will have information on the hazard of the material being shipped.
3. Determine the need for health physics support.
4. Obtain health physics support if warranted.

Obtain names of all persons originally present when the incident/accident occurred, and those who entered the potentially contaminated or radioactive area after the incident/accident started.

If possible, assist in the monitoring of emergency workers for contamination.

Obtain results for any self-reading dosimeters in use.

Restrict entry into the potentially contaminated or radioactive area until it has been surveyed and determined to be free of contamination and unacceptable levels of radiation.

Prepare a written report of the accident, its cause or causes, and subsequent remedial or protective measures for submission to the Division of Radiation Protection.

NOTES:

ACCIDENT/EMERGENCY

ON-SCENE INCIDENT COMMANDER'S CHECKLIST:

THE SAVING OF LIVES TAKES PRECEDENCE OVER RADIATION CONCERNS!

Proceed with your primary task or function.

Assess the hazard of direct exposure, contamination, or inhalation of radioactive material.

Obtain the shipping papers or other documents with a description of the material in question, unless the risk to personnel is unacceptable.

Is a knowledgeable individual available from facility, shipper or consignee?

What information is available from package labels, vehicle placards, driver/passengers, victims, bystanders, or workers?

Determine that survey meters to be used are in good working order, have been source checked, and are being used properly.

Determine if self-reading dosimeters are in use and assure that results are recorded.

Confine spills to the smallest possible area.

Control access to the area by establishing an exclusion area. Detour traffic (vehicles and pedestrian) around exclusion area until radiation survey assures that it is safe to move damaged vehicles and debris and that the roadway is not contaminated. Prevent removal of potentially contaminated material until it has been properly surveyed and released.

Verify that 206-NUCLEAR has been reached.

Assure that all emergency vehicles are surveyed before they leave the scene. Wash down thoroughly if the vehicle and crew must leave prior to a survey by trained staff.

ON-SCENE INCIDENT COMMANDER'S CHECKLIST:

DECONTAMINATION OF PERSONNEL

Do not delay seeking medical help; however, the following steps can be taken immediately:

SKIN OR SUPERFICIAL CONTAMINATION OF WOUNDS

Remove any loose material with tape, working from the outer edge towards the center of contaminated area.

Wash thoroughly with running water and soap; blot dry. **DO NOT SCRUB.**

Monitor the area with the appropriate survey instrument and repeat washing as necessary.

Treat all towels, soap, wash cloths, etc. as contaminated until a proper survey proves otherwise.

EYE CONTAMINATION

Treat immediately by irrigating with lots of water for at least five (5) full minutes.

INTERNAL CONTAMINATION

Do not attempt these procedures unless you have the proper medical training.

Ingestion: eliminate quickly; possibly induce vomiting.

Inhalation: induce sneezing; blow nose repeatedly.

CONTACT A PHYSICIAN, AND HOSPITAL AS SOON AS POSSIBLE.

NOTES:

NOTIFICATION OF A RADIATION EMERGENCY

In the event of a radiation emergency, call the following Seattle number:

(206) N-U-C-L-E-A-R (682-5327)

IDENTIFY THE CALL AS A RADIATION EMERGENCY AND GIVE THE FOLLOWING INFORMATION:

- 1). Your name, organization & call-back phone.
- 2). On scene contact person & phone.
- 3). Location & brief description of incident.
- 4). Is the event ongoing or over?
- 5). Is there an immediate life threatening situation?
- 6). Number, condition & location of injured.
- 7). Describe radioactive materials, labels, shipping papers, sources, device type, model names, isotopes, curie content (if known).

NOTES:

Appendix A

TRANSPORTATION OF RADIOACTIVE MATERIAL

The transport of radioactive material is regulated by the U. S. Department of Transportation. Only small quantities of radioactive material are allowed to go through the mail. Marking of packages, and placarding of vehicles indicate the presence of radioactive material. Labels indicate the relative degree of hazard for intact packages. In the event of an accident involving significant quantities of radioactive material the following is of importance.

SHIPPING PAPERS

Every shipment of radioactive material must be accompanied by proper shipping papers which must be kept within the reach of the driver or in a pocket on the driver's door. The requirement for these papers is described in detail in Title 49 of the Code of Federal Regulation, Transportation. The shipping papers must contain the following entries:

Contents of the package by proper shipping name, which includes the name of each radionuclide in the material being shipped.

A description of the physical and chemical form.

The activity contained in the package listed in terms of curies (Ci), millicuries (mCi), microcuries (μ Ci), megabecquerels (MBq), or gigabecquerels (GBq).

The category of package label applied to the package.

The maximum radiation levels per package and at three (3) feet.

Emergency response phone number.

Emergency response information including immediate health hazard, risk of fire and/or explosion, immediate precautions to be taken in the event of an accident, immediate methods of handling fires, initial methods for handling spills or leaks, and preliminary first aid measures.

PACKAGE LABELING AND MARKING

The labels required on packages of radioactive material signal the degree of hazard. Examples of these labels can be found in appendix C. The degree of hazard is displayed in the following table.

Table of Radioactive materials package labels and corresponding maximum radiation levels.

PACKAGE LABEL	MAXIMUM RADIATION	
RADIOACTIVE WHITE I	0.5 mR/hr @ package surface.	No reading @ 1 meter (3.3 ft.).
RADIOACTIVE YELLOW II	50.0 mR/hr @ package surface.	1.0 mR/hr @ 1 meter (3.3 ft.).
RADIOACTIVE YELLOW III	200.0 mR/hr @ package surface.	10.0 mR/hr @ 1 meter (3.3 ft.).

RADIOLOGICAL CONCERNS

The maximum radiation reading on most packages is limited to 200 mR/hr. Casks shipped exclusive use may have a surface radiation reading of up to 1 R/hr (1000 mR/hr) as long as it is no higher than 200 mR/hr on the outside of the enclosed vehicle. Time spent in the vicinity of these packages should be limited to lifesaving efforts only, especially if the cask may be damaged.

The transport index is the radiation reading in mR/hr at one (1) meter (3.3 ft). This appears on radioactive yellow II and radioactive yellow III package labels and is noted in the shipping papers.

Some packages do not require labeling, however marking (stencil, tag, or other mark) must appear on the package. Packages marked with "RADIOACTIVE, Instrument or Article," or "RADIOACTIVE, Limited Quantity" are restricted to 0.5 mR/hr on the package surface and placarding is not required for the transport vehicle. Packages or shipments of low specific activity (LSA) material are restricted to 200 mR/hr on each package surface unless shipped as an exclusive use vehicle, in which case the package is limited to 1000 mR/hr (1R/hr) on the package surface and the vehicle surface cannot exceed 200 mR/hr. Placarding is required for exclusive use shipments.

VEHICLE PLACARDING

Any vehicle used for an exclusive use shipment of LSA material or having on board a package bearing a **RADIOACTIVE YELLOW III** label is required to have **RADIOACTIVE** placards displayed on all four sides. Vehicles containing a "**HIGHWAY ROUTE CONTROLLED QUANTITY**" must be placarded with the **RADIOACTIVE** placard on a black-bordered, white square.

Appendix B

RADIATION DETECTION INSTRUMENTATION

Radiation detection instruments should be calibrated at least once every twelve (12) months. Batteries should not be stored inside the instrument. Only personnel with specific training in the use of these instruments should operate them. Untrained personnel can cause more harm through misinformation than might arise from the true emergency.

TYPES OF INSTRUMENTS

The Geiger-Muller (GM) tube (such as the CDV-700) and the Ion chamber (CDV-715) are two (2) basic types of detectors used in survey meters. GM tubes are for general surveys (i.e. low levels of radiation or contamination surveys). Ion chambers are used for high exposure rate surveys. Both types require good, charged batteries.

All survey meters should be response checked with a source of known radiation to ensure that the meter will respond to radiation. This should be done before going into an area that may contain radioactive material.

Each type of survey meter has a number of scales (eg. x10, x100, x1000). Start your survey with the meter on the lowest scale (x10 in this example). As the radiation intensity increases, and the needle on the meter face approaches its maximum reading, switch to successively higher scales. If the meter reaches or exceeds the maximum reading on the highest scale, leave the area at once and wait for help.

My survey instruments are:



CDV-715 HIGH LEVEL METER

For high level radiation, not for contamination surveys.

If radiation is measurable on CDV-715, you are NOT within acceptable risk limits, (greater than 50 mR/hr). Avoid areas except for lifesaving /critical emergency activities.

CDV-715 PRE-OPERATIONAL CHECK

Perform check away from suspected radiation.

Install batteries. Turn selector switch to ZERO and allow 2 minutes for instrument to warm-up. Adjust ZERO control knob until meter reads zero.

Turn selector switch to CIRCUIT CHECK and check that the needle is in the area marked "circuit check". Obtain fresh batteries if the needle does not reach the circuit check area.

Switch instrument off when not in use.

Remove batteries when finished.

MONITORING WITH THE CDV-715

Perform pre-operational check.

Switch to X 0.1 scale.

Hold instrument out in front of you with your arm extended. Slowly approach suspected source. If it is important to approach closer and the instrument needle is near the top of the X 0.1 scale, change scales and move in more rapidly.

Minimize time spent in radiation levels higher than those measured by the X0.1 scale.



CDV-700 LOW LEVEL METER

For low to moderate levels of radiation (i.e less than 50 mR/hr) and contamination surveys. The CDV-700 will register "0" (as if not working properly) in high radiation field. If measurable on CDV-700, you are within limits acceptable for "normal" emergency operations.

CDV-700 PRE-OPERATIONAL CHECK

Perform check away from suspected contamination or radiation.

Install batteries and headset.

Turn selector switch to X10 and allow 30 seconds for warm-up of instrument.

Rotate beta shield fully open. Place the open window of the probe in contact with the check source on the side. The meter should respond to around mid-scale.

Check that headphones are working.

Switch instrument off when not in use.

Remove batteries when finished.

MONITORING WITH THE CDV-700

Perform pre-operational check.

Use with probe window closed.

Hold probe out in front of you, towards suspected source of radiation.

Adjust range switch as necessary to keep meter needle on scale. Start on the lowest (smallest) scale.

Check all around the source to ensure there are no high dose rate beams of radiation.

Use mR/hr scale when reporting radiation levels.

Note: Headphones are useful for finding the source, **NOT** for measuring radiation.

FINDING CONTAMINATION WITH THE CDV-700

Perform pre-operational check.

Use instrument with probe window open.

Keep probe about 1/2" from surface being monitored.

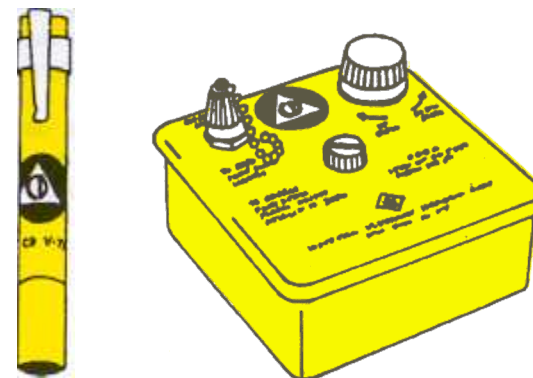
Move probe slowly (1" per second).

Use headphones.

Use C/M (counts per minute) scale to report contamination. Switch range as necessary to keep needle around mid-scale.

Determine a background reading away from the source of radiation.

NOTES:



PENCIL DOSIMETER AND CHARGER

Charging and Using the Pencil Dosimeter

Remove cover from CDV-750 charger and insert one D cell battery into the charger. Replace cover and remove protective cap from charging contact. Push dosimeter down onto pin. Look through dosimeter and turn knob to adjust hairline down to the low end of the scale. Remove dosimeter, look through dosimeter into light. Record the reading. Clip dosimeter onto chest pocket or belt. At half hour intervals during incident, read dosimeter by looking through dosimeter into light. Do not use the charger to read the dosimeter. At the end of the incident, note and record the final reading. Subtract this reading from the original reading to get the total dose. Record this dose for the record.

The dosimeter of choice is the low range CDV-138 (0 to 200 milliroentgen). If available, a second dosimeter of higher range should also be worn and recorded.

Appendix C

LABELING FOR PACKAGES OF RADIOACTIVE MATERIAL

Radioactive White I

For each package not exceeding 0.5 mR/hr at any point on the surface. The radiation reading must not exceed normal background at one (1) meter (3.3 ft.). Each package must have two (2) labels, affixed to opposite sides.



The label dimensions are four (4) inches (101mm) on each side. The label is black on white with a single red bar (I).

Radioactive Yellow II

For packages not exceeding 50 mR/hr at any point on the external surface and not exceeding 1.0 mR/hr at one (1) meter (3.3 ft.). Each package must have two (2) labels affixed to opposite sides. Labels are four (4) inches on each side. A black symbol appears on yellow background. The remainder of the label is black on white except for two (2) red bars (II).



Radioactive Yellow III

For packages not exceeding 200 mR/hr at any point on the external surface and not exceeding 10 mR/hr at one (1) meter (3.3 ft.). Each package must have two (2) labels affixed to opposite sides. Labels are four (4) inches on a side. A black symbol appears on a yellow background (top half). The rest of the label is white with black printing except for three (3) red bars (III).



Radioactive Materials Placard

For motor vehicles, freight containers and rail cars. The placard measures ten and 3/4 inches (10 & 3/4") on each side. The top portion must be yellow with the symbol black. The bottom portion is black on white. The placard is displayed on both sides and both ends of the transport vehicle (a total of four (4) placards).



Highway Route Controlled Quantity Placarding

This placard arrangement signifies a “Highway Route Controlled Quantity”
The standard radioactive placard is mounted on a white square background measuring fourteen and 1/4 inches (14 & 1/4”) on each side surrounded by a black border.



Appendix D

Radiation Caution Signs

State and Federal regulations require that radiation areas and sources of radiation be posted with the appropriate caution sign.

One (1) or more of the signs may be required in combination for a given area or room.

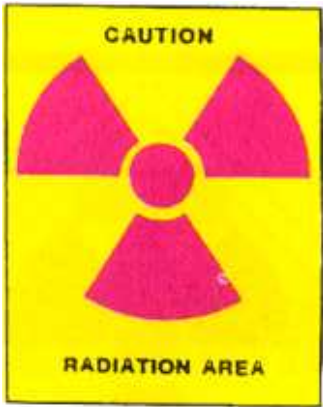


Caution, Radioactive Material

Identifies containers of radioactive material or areas where radioactive material is stored or used. The sign may also read “Danger - Radioactive Material.”

Caution, Radiation Area

Identifies areas where an individual could receive a radiation dose to the whole body in excess of five (5) millirem in one (1) hour. The sign should only read "Caution, Radiation Area."



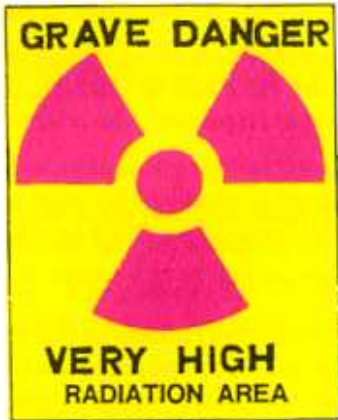
Caution, High Radiation Area

Identifies areas where an individual could receive a radiation dose to the whole body in excess of one hundred (100) millirem in one (1) hour. The sign may also read "Danger, High Radiation Area."



Grave Danger, Very High Radiation Area

Identifies areas where an individual could encounter radiation levels of 500 Rad or more in one (1) hour at one meter from a radiation source (potentially lethal exposure). The sign should only read "Grave Danger, Very High Radiation Area."



Caution, Airborne Radioactivity Area

Identifies areas where an individual could be exposed to a significant amount of airborne radioactive material. The sign may also read "Danger, Airborne Radioactivity Area."



Appendix E

GLOSSARY OF COMMON TERMS

USED WITH RADIOACTIVE MATERIAL

Camera - An industrial radiography device containing a shielded, sealed source of radioactive material which may be placed in an unshielded position to provide a radiographic exposure. Also referred to as a radiographic exposure device.

Contamination - Radioactive material in any place where it is not desired and particularly where its presence may be harmful. It may impair the validity of a procedure as well as be a source of danger to personnel.

Curie - An expression of the quantity of radioactive material in terms of number of atoms which disintegrate (decay) per second. Radioactive materials are usually labeled in curies (Ci) or fractions thereof [e.g. one millicurie (mCi) = 0.001 curie; one microcurie (μ Ci) = 0.000001 curie]. Increasingly, the international units of becquerels (Bq) and its multiples (MBq, GBq, TBq) are used.

Decontamination - The reduction or removal of radioactive contamination from a structure, area, object, or person. Decontamination may be accomplished by (1) removing the contamination from a surface, (2) isolating the material until the radioactivity decreases from natural decay.

Department - The Department of Health (DOH) which has been designated by RCW 70.98 (Nuclear Energy and Radiation) as the state Radiation Control Agency.

Dose - The accumulated energy absorbed by matter due to ionizing radiation. It is expressed as the radiation absorbed dose (rad) or sometimes in units of roentgen (R), or milliroentgen (mR). Rem or mrem are special units of dose equivalent which refer to the biological effects in humans from the radiation exposure.

Exclusion Area - An area with boundaries established to control access to the site of a radiation incident in the interest of public safety.

Highway Route Controlled Quantity - A "large" quantity of radioactive material in a single package whose transportation is routed away from centers of population density. This material must be shipped in containers capable of withstanding worst-case scenario accident conditions. Such a quantity has additional requirements for labeling, placarding, and paperwork as well as a training requirement for the driver.

Hot Line - A boundary between an area of radiation hazard and an area of little or no radiation hazard. Monitoring is done here to prevent contamination from leaving an exclusion or controlled area.

Industrial Radiography - The examination of the macroscopic structure of materials by nondestructive methods utilizing source(s) of ionizing radiation.

Licensee - Any person who is licensed by DOH in accordance with WAC 246 and RCW 70.98.

Low Specific Activity (LSA) - Material in which the activity is essentially uniformly distributed and in which the estimated average concentration per gram of contents does not exceed the specifications of the Code of Federal Regulations, Title 49-Transportation, Section 173.403(n).

Moisture Density Gauge - A type of portable device utilizing a gamma or neutron source to measure water content or matter density in agricultural or construction projects. These units are also called portable gauges or nuclear densitometers.

Monitor - To check personnel, equipment, or areas for the presence of radiation or radioactive material. An individual who checks radiation levels with a survey meter is often called a monitor.

Protective Action - Any action designed to mitigate the effects of radiation exposure as a result of a radiation emergency.

Pyrophoric - The capability of certain materials to ignite spontaneously when exposed to air or water.

Radiation - Refers to ionizing radiation; usually one of the three primary forms: Gamma rays, alpha and beta particles.

a) Gamma rays and X-rays are short wave length electromagnetic radiations. They are the most penetrating form of ionizing radiation and travel great distances in air (many feet).

b) Alpha particles are positively charged particles which travel very short distances in air (less than one inch) and which have very little penetrating ability making them chiefly internal radiation hazards.

c) Beta particles are negatively charged particles that travel moderate distances in air (several feet). Beta particles have an intermediate penetrating ability. They chiefly cause significant skin and eye exposure.

Radiation Emergency - An unplanned occurrence which may present a public hazard due to radiation exposure or contamination. It may comprise any one or combination of the following:

a). Transportation accidents involving motor vehicles, rail, or aircraft carrying radioactive material.

b). Explosion, fire or combination thereof, occurring in either a structure or vehicle containing radioactive materials.

c). Stolen or lost radioactive materials.

d). Injuries involving radioactive materials.

e). User spills or releases involving immediate radiation hazards to personnel.

f). Any natural phenomenon over which human beings have no control which involves substantial quantities of radioactive materials.

Radiation Incidents - Any unexpected event involving unplanned or overexposure of personnel and/or loss of containment of radioactive material which could adversely affect the public health.

Radiation Level - Generally refers to the energy imparted to matter due to radioactive emissions per unit of time; also called "dose rate" These levels are expressed in the terms R/hr or mR/hr.

Radiation Safety Officer (RSO) - One who has the knowledge and responsibility to apply appropriate radiation protection controls and who has been identified in the applicable Radioactive Materials License. The RSO shall be guided by the provisions of WAC 246-221-250 and 246-221-300 Appendix B in responding to emergencies.

Source - Any radioactive material capable of producing ionizing radiation.

Survey - A systematic effort to measure radiation within a predetermined area.

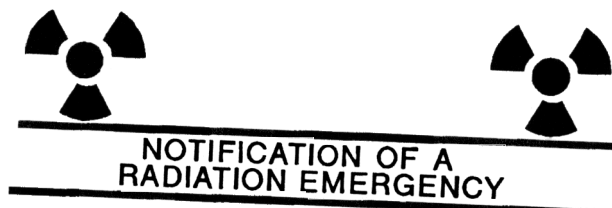
Wipe Sample - A test for loose or removable radioactive contamination in which a surface is wiped with cloth or paper for laboratory analysis.

Unusual Occurrence - Any event or situation involving radioactive material which deviates from the norm, and may affect public health.

Yellowcake - A uranium oxide concentrate that is processed into fuel for nuclear reactors. Note: yellowcake is sometimes brown or black, as well as yellow.

Appendix F

Copies of the following are available from the Division of Radiation Protection at the address listed in this booklet.



In the event of a RADIATION EMERGENCY, call the following Seattle Number:
**(206) N-U-C-L-E-A-R
(682-5327)**

Identify the call as a RADIATION EMERGENCY and give the following information:

1. Your name, organization and call-back phone number.
2. On scene contact person and phone number.

UPON CONTACT WITH A STATE RADIATION EMERGENCY RESPONSE OFFICER, REPORT THE FOLLOWING INFORMATION:

3. Location and description of incident.
4. Is the event continuing or is it over?
5. Is there an immediate life-threatening situation?
6. Number, condition and location of injured.

Describe the radioactive materials, labels, shipping papers, sources, device type, model names, nuclides, and curie content (if known).



1991

POST

Emergency Response Information Wallet Card

REMEMBER RADIATION SAFETY

- Restrict access within 150 feet of radiation source.
- Stay upwind of fire or explosion.
- Reduce exposure by:
Increasing distance from source,
limiting time near source,
placing heavy solid objects between radiation source and people.
- Control personnel and equipment until they can be checked for radioactive contamination.
- Warn medics if injured may be contaminated.

Call 206-NUCLEAR (206-682-5327).

STATE OF WASHINGTON, Radiation Protection, DOH

RADIATION EMERGENCY?

CALL 24 HOUR PHONE: 206-NUCLEAR

HAVE THE FOLLOWING INFORMATION READY:

1. Your name, organization and call-back phone.
2. On scene contact person and phone.
3. Location and description of incident.
4. Is the event ongoing or over?
5. Is there an immediate life threatening situation?
6. Number, condition and location of injured.
7. Describe radioactive materials, labels, shipping papers, sources, device type, model names, isotopes, curie contents (if known).

IN THE EVENT OF AN ACCIDENT:

IN THE EVENT OF AN ACCIDENT:

Rescue Victims, Give Lifesaving Emergency Assistance.

Whenever possible, remain upwind to fight fire.

Restrict access to the site to avoid spreading contamination.

Do not attempt to move or clean up damaged containers.

Notify the Division of Radiation Protection by calling:

206-N-U-C-L-E-A-R. (682-5327)

Identify the call as a **RADIATION EMERGENCY**

Provide the requested information.

ON SCENE NOTES:

DATE ____/____/____ TIME_

WHO: _____

WHERE: _____

WHAT HAPPENED: _____

Radioactive isotopes involved: _____
